role than that of a leader, a member of the group can be established as a go-between or intermediary between the public health worker and the group. Continuing attention needs to be given, however, to the possibility that the intermediary will become so identified with the public health worker that he is no longer a representative member of his group.

The general extent to which people "cooperate" with public health programs is at times affected by their economic level, but more often seems to be related to the number of years they have attended school. A distinction should, of course, be made between years of educational achievement and native intelligence. The "noncooperative" members of society are not a degraded group with inherent deficiencies, but rather are graphic evidence of our own inability as public health workers to reach and to influence them. The social scientist helps the public health worker to identify such segments of the population for whom more concentrated efforts may be indicated.

In this and in other ways the social scientist is more and more being looked at as an important member of the public health team. Hopefully, the public health worker in turn is gaining a place and recognizing for himself a role as a member of the broader community-wide social science team.

Dr. Wishik is professor of maternal and child health, University of Pittsburgh Graduate School of Public Health, Pittsburgh, Pa.

These remarks were presented before a Joint Session of the American School Health Association, Dental Health, Food and Nutrition, Health Officers, Maternal and Child Health, Mental Health, Public Health Education, and Public Health Nursing Sections of the American Public Health Association at the Eighty-Fifth Annual Meeting in Cleveland, Ohio, November 11–15, 1957.

What factors influence the way in which people react to a health program? Some answers are contained in this study by the National Foundation for Infantile Paralysis. The implications range far beyond polio vaccination and should be of interest to all health workers.

I. A STUDY OF THE PUBLIC'S ACCEPTANCE OF THE SALK VACCINE PROGRAM

Melvin A. Glasser

THE SALK vaccine was declared safe and effective on April 12, 1955, and the nation's vaccination program began on April 16 of that year. Eighteen months later, in the fall of 1956, more than half the people in the age groups most vulnerable to paralytic polio had not even begun to be vaccinated. By this time initial excitement over the announcement of the vaccine's effective-

ness had faded. Far behind, too, were early production difficulties and the so-called Cutter "incident." Although the vaccine had been in short supply, by the fall of 1956 there was a good supply. Stocks were beginning to pile up and manufacturers were considering production cutbacks.

Many felt that the record merited congratulations rather than concern. After all, some 43 million children and adults in the target group (all persons under 40 and pregnant women) had already received one or more of the required three injections. Never before had a new vaccine been so widely used in so short a time.

At the National Foundation for Infantile Paralysis and elsewhere, however, there was no elation at a job half done. The mission was to wipe out paralytic polio. Scientists were convinced that the threat of epidemic paralytic polio in the United States would not end until at least 85 per cent of the target group was fully vaccinated, and the ultimate goal had to be 100 per cent. Accordingly, while engaging in active promotion of vaccination, the National Foundation decided on a nation-wide survey to determine why many people were not being vaccinated.

The National Foundation had accumulated much experience in the conduct and use of such studies and had learned some lessons about them:

First: Revolutionary or completely unanticipated findings should not be expected. An experienced staff in daily contact with the problem should be and almost always is aware of the conclusions at which a study might arrive. But such studies give perspective and suggest emphases and areas of programming that may not have been given sufficient attention.

Second: The organization ordering the study must determine for itself the major questions it needs answered. Only when this is fully and carefully done can research groups proceed intelligently.

Third: Key staff must be involved in the development of study plans and particularly in the translation of study findings into program activities.

Fourth: In selecting a research group to conduct the study these factors, among others, must be considered:

Does it have the organization to complete the study in time?

Does it know the field involved well enough to understand quickly the nature of the problem?

Has it demonstrated that it can bring to bear on its studies the insights of social, psychologic, and economic factors?

Guided by these considerations, arrangements were made with two research groups with which the National Foundation had previously had favorable experience. The American Institute of Public Opinion (Dr. George Gallup's organization) conducted the actual study; the Bureau of Applied Social Research at Columbia University assisted in the study design, in the analysis of the data, and in developing the conclusions.*

The purposes of the study were:

1. To determine the nature of public resistance to vaccination.
2. To learn how this problem differed from the general problem of the acceptance of any new vaccine.
3. To discover the key people or contacts who help or stimulate families to go ahead with vaccination.
4. To learn to what extent the public education program of the National Foundation should be aimed at individual vaccination and to what extent at stimulating family vaccination.
5. To determine what part lack of funds plays in holding up vaccination.
6. To note any regional variations in the

---

* Emery Ruby, editor of the Gallup Poll, and Dr. David Sills, acting director, Bureau of Applied Social Research, Columbia University, assumed major responsibility of directing the participation of their organizations in this study.

acceptance of the vaccine and reasons given for acceptance or resistance.

Personal interviews were conducted between January 14 and January 28, 1957, by field interviewers who identified themselves as representing the American Institute of Public Opinion which was carrying on a health study. A total of 3,509 interviews were conducted on a nation-wide basis. Each interview lasted approximately 45 minutes. These interviews were obtained from a sample of adults under 40 years of age, a sample of mothers of teen-age children, and a sample of mothers of children of all ages under 21. The total sample was selected to be adequate statistically and to give accurate results within a small margin of error.

Findings

The study revealed that there was broad public knowledge about the vaccine. By and large, however, people were failing to take advantage of the vaccine for themselves and their children, not because of specific resistance to it, but rather because of lack of definite, positive influences which might direct them to a clinic or doctor's office for inoculations.

The following were among the more significant specific findings and conclusions:

1. A significant number of persons in the target group were unprotected:

Only one in eight adults in the 21–40 age group had started vaccination.

Two out of five teen-agers had one or more inoculations.

Nearly three out of every five children under seven had one or more polio shots.

Among children seven to 12 years, three out of every four had one or more polio shots. This high percentage reflected the National Foundation's free school vaccination program for this group.

2. The only major regional variations in the acceptance of the vaccine were a somewhat lower rate in the South (probably related to low economic and educational status) and a somewhat lower acceptance rate among teen-agers in the Mountain and Pacific states. This was believed to be related to the aftermath of the fears generated by the Cutter "incident," which centered in the Far West.

3. Failure of adults in the target group to make use of the vaccine was traced largely to two factors: "Plain procrastination," and the feeling that they were not susceptible to the disease. Related to this was the belief that victory over polio had been achieved. As a consequence there was considerable lethargy about obtaining vaccine protection except under the stimulus of an epidemic in the community or acquaintance with someone contracting the disease.

4. There were two indications that although there was widespread general knowledge about the vaccine, there were gaps in specific knowledge and that these contributed to nonvaccination:

Many parents of teen-agers expressed the belief that teen-agers were not as susceptible to the disease as younger children. This, together with "procrastination," was described as the major factor in the relatively low acceptance rate of the teen-age group.

Confusion existed, particularly among young adults, and to a lesser extent among parents of teen-agers, as to the availability of vaccine. While there was actually a plentiful supply, many persons were not yet aware of this.

As a means of making the vaccinations readily and easily available, and to demonstrate its availability, the recommendation was made that the National Foundation encourage the widespread use of public clinics for polio immunizations.

5. As in most other public health matters the data presented revealed a relationship between educational level, annual income, and the probability of vaccination having taken place. Persons with more education and higher incomes were apt to know more about the vaccine and the threat of polio and,

accordingly, were more likely to have been immunized.

6. Doubts about the safety and efficacy of the Salk vaccine appeared to have been largely dispelled. Nine out of every 10 adults in the target groups expressed confidence in the vaccine as a good means of preventing paralytic polio. Greatest doubt as to safety was expressed in the Mountain and Pacific states—again a reflection of the Cutter "incident."

7. The question whether lack of funds was holding up polio inoculations was of major concern to the National Foundation. The findings, regrettably, were not conclusive. One analysis of the data concluded that lack of funds was a deterrent and cited as evidence the fact that nearly three out of every 10 adults in the target group said "cost would be a reason" why many of their friends and acquaintances had not had polio shots. Furthermore, one out of every five young adults in the $7,000 and over income group had had one or more shots, but only one in 16 of those in the under $3,000 income group had started their inoculations.

However, another analysis of the same data concluded that the cost of vaccination was not a major deterrent. Only 28 per cent of the total sample mentioned this as a reason and it was mentioned most frequently by persons who actually had been vaccinated. Furthermore, the largest differences between percentages were found among adults in the low socioeconomic group. While 40 per cent of the vaccinated persons in the low socioeconomic group asserted that cost is a reason, only 27 per cent of the nonvaccinated adults in this group gave this reason.

Actual experience in the period since the study would indicate that lack of funds, while playing a role, has not been a major deterrent to vaccination.

8. The physician is of key importance in any program to achieve universal polio immunization. This was evident in a special analysis made of the unvaccinated group. An overwhelming majority of adults in the target group who had not yet had polio shots said they would be vaccinated if their doctor recommended it. And 80–90 per cent of this group reported they had a regular doctor. However, the nonvaccinated adults were found to be less likely to visit their doctors regularly. Only half had visited a doctor during the six months prior to the interview, in contrast to nearly three-fourths of the vaccinated group.

The pediatrician was suggested as a physician who was particularly influential in vaccination of the target group. Twenty-seven per cent of the children in the study were under the care of pediatricians. Except for the low socioeconomic group, nonvaccinated children were as likely as others to be seen by pediatricians.

9. When presented with a list of eight possible sources from which they could obtain information on polio injections, more than nine out of 10 adults in the target group rated the following as the top three they would depend on most for reliable information: (a) my doctor (59 per cent), (b) local NFIP chapter (22 per cent), (c) city, county health officers (16 per cent).

10. Finally, an over-all analysis of the data indicated that large numbers had not yet started their inoculation because of social rather than psychologic or economic factors. The vaccine was widely known and generally considered to be good. Doubts about its safety and efficacy were slight. Cost considerations were not of major importance. Those unvaccinated, however, were more likely to be of low socioeconomic status (annual income of less than $5,000 and less than high school graduation); they were less likely to

Table 1

	Vaccinated People			Nonvaccinated People		
	Socioeconomic Status					
	High	Middle	Low	High	Middle	Low
Per cent of mothers of children under 13 who stated most of their friends' children had been vaccinated	93	89	83	69	56	41
Per cent of mothers of children 13–20 who stated most of their friends' children had been vaccinated	89	82	84	69	62	45
Per cent of adults under 40 who know another adult who has been vaccinated	90	87	77	38	35	20
Per cent of adults under 40 who state that many of their friends and acquaintances have been vaccinated	36	35	23	9	8	5

belong to voluntary associations; they were less likely to be able to answer questions of fact about polio and the vaccine.

The social origins of nonvaccination are most strikingly revealed in the Table 1 comparing the role of social relationships in vaccination and nonvaccination.

This table is evidence that people tend to behave in this aspect of their lives as in others, the way their friends do—providing they know what their friends have done. The social activity of talking about vaccination is thus a major determinant of vaccination itself. From this it appears likely that:

Those already vaccinated are the most effective protagonists for further vaccinations.

The problem of the unvaccinated was primarily, though not entirely, with lower socioeconomic groups.

Informal communication—getting people to talk about vaccine—would appear to be the most direct method of accelerating the vaccination program.

The data and findings of this survey were studied by the National Foundation staff. A series of steps were taken in order to translate the study recommendations into specific action programs. Many of these activities appear to be achieving the desired results. It would, of course, be unfair and inaccurate to attribute the present improved situation solely to this study and its follow-up. Numerous other factors have been significant. Nonetheless, as of November 1, 1957, just about one year after our concern over polio vaccination lethargy led us to plan a study, some 64 million Americans, 21 million more than a year ago, had already had one or more polio injections.

But lest this trend convey a feeling of smugness and encourage a renewed state of lethargy which would require another study, we must add that there are still 45 million Americans in the

under 40-year group who have yet to start their polio immunization and 30 million who require one or more injections to complete their vaccination. Until this entire group is reached, none of us can rest.

Mr. Glasser is assistant to the president, National Foundation for Infantile Paralysis, New York, N. Y.

This paper was presented before a Joint Session of the American School Health Association and the Dental Health, Food and Nutrition, Health Officers, Maternal and Child Health, Mental Health, Public Health Education, and Public Health Nursing Sections of the American Public Health Association at the Eighty-Fifth Annual Meeting in Cleveland, Ohio, November 14, 1957.

This California study gives further evidence that an individual's attitude toward health is related to his socioeconomic status and to his perception of the peer group. Furthermore, attention is drawn to the effect of the quality of community programs on public attitudes and action.

II. ATTITUDES OF CALIFORNIANS TOWARD POLIOMYELITIS VACCINATION

Malcolm H. Merrill, M.D., M.P.H., F.A.P.H.A.; Arthur C. Hollister, M.D., M.P.H., F.A.P.H.A.; Stephen F. Gibbens; Ann W. Haynes, M.P.H., F.A.P.H.A.; with the assistance of Vita H. Leslau.

IN THE summer of 1956, the California State Department of Public Health, with the help of the U. S. Bureau of the Census, conducted a survey of California households to collect information concerning the status of poliomyelitis vaccination and about attitudes toward polio. Included were two other content areas of interest to our department. These concerned the opinions and attitudes of the public toward air pollution and toward child health practices.

The household interview technic seemed to be a suitable tool for such a study. Our department had accumulated substantial experience with the survey technic, having just completed the California Health Survey of 1954–1955, a state-wide study of general morbidity.[1] The subject of polio was particularly germane because of the introduction of the Salk vaccine and the occurrence of the "Cutter incident."

Two factors in the California poliomyelitis situation were unique.

First: Since 1940, case rates in California have usually exceeded the national average and public attention has been directed to the problem by newspapers, radio and TV, probably more forcefully than in many other areas of the country.

Second: Almost half the persons who contracted polio following administration of the Cutter vaccine were residents of California. Consequently, the Cutter